CLAIMS

1. An anastomotic connector for attaching two blood vessels, comprising:

a cylinder-like portion defining a lumen, having two ends and comprising an array of cells-elements; and

a tissue engaging portion comprising at least one set of spikes comprising at least one spike arranged adjacent one of the two ends of said cylinder-like portion.

2. A connector according to claim 1, comprising at least a second set of spikes adjacent the other of the two ends.

3. An anastomotic connector for attaching two blood vessels, comprising:

a cylinder-like portion defining a lumen; and

a plurality of tissue engaging portions for engaging two blood vessels, said plurality comprising at least one spike,

wherein radial expansion of said cylinder-like portion causes said at least one spike to engage tissue.

4. An anastomotic connector according to claim 3, wherein radial expansion of said cylinder-like portion is de-coupled from axial contraction of said cylinder-like portion.

5. An anastomotic connector for attaching two blood vessels, comprising:

a cylinder-like portion defining a lumen; and

a plurality of tissue engaging portions for engaging two blood vessels,

wherein radial expansion of said cylinder-like portion is coupled to axial contraction of said cylinder-like portion.

6. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is more than about 1:10.

7. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is between than about 1:10 and 1:5.

8. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is between than about 1:5 and 1:2.

9. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is between than about 1:2 and 1:1.

10. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is between than about 1:1 and 2:1.

11. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is between than about 2:1 and 4:1.

12. A connector according to claim 5, wherein at a maximum radial expansion, a ratio between axial contraction and radial expansion is less than about 4:1.

13. A connector according to claim 5, wherein said radial expansion activates at least one of said tissue engaging portions.

14. A connector according to claim 5, wherein at least one of said tissue engaging portions comprises at least one spike.

15. A connector according to claim 3, wherein said cylinder-like portion comprises a plurality of cell elements.

16. A connector according to claim 5, wherein said cylinder-like portion comprises a plurality of cell elements.

17. A connector according to any of claims 2-4 or 14, wherein said at least one spike is arranged to extend out of said lumen when said tissue engaging portions engage tissue in a completed anastomosis.

18. A connector according to claim 17, wherein said extended spike lies in a plane tangent to said cylinder-like portion.

19. A connector according to claim 17, wherein said extended spike lies in a plane perpendicular to said cylinder-like portion.

20. A connector according to any of claims 2-4 or 14, wherein said at least one spike is arranged to extend into said lumen when said tissue engaging portions engage tissue in a completed anastomosis.

21. A connector according to any of claims 2-4 or 14, wherein said device is arranged to cantilever said at least one spike into an extended configuration by an expansion of said cylinder-like portion.

22. A connector according to any of claims 2-4 or 14, wherein said device is arranged to release said at least one spike to assume an extended configuration by an expansion of said cylinder-like portion.

23. A connector according to any of claims 2-4 or 14, wherein a portion of said cylinder-like portion is arranged to deform into said at least one spike, by an expansion of said cylinder-like portion.

24. A connector according to any of claims 2-4 or 14, wherein said spike is pre-stressed to lie outside of an axial profile of said cylinder-like portion.

25. A connector according to any of claims 2-4 or 14, wherein said spike is coupled to a base, and pivotally connected to said cylinder-like portion and wherein said base extends into said lumen.

26. A connector according to any of claims 2-4 or 14, wherein said cylinder-like portion includes a plurality of weakenings, such that plastically deforming said cylinder-like portion will extend said spikes to engage said tissue.

27. A connector according to any of claims 2-4 or 14, wherein said cylinder-like portion comprises a bi-stable cell, which cell extends said spike in one state and not in the other one of said states.

28. A connector according to any of claims 2-4 or 14, wherein said cylinder-like portion is arranged to twist, in at least one location thereon, which location is coupled to said at least one spike, whereby said twist causes said spike to extend.

29. A connector according to any of claims 2-4 or 14, wherein said spike comprises a protrusion to prevent engaged tissue from slipping off said spike.

30. A connector according to any of claims 2-4 or 14, wherein said spike comprises a protrusion to prevent engaged tissue from slipping along said spike beyond said protrusion.

31. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend at least 90° when it extends.

32. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend at least 150° when it extends.

33. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend at least 180° when it extends.

34. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend at least 210° when it extends.

35. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend at one point thereon when it extends.

36. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend at at least two points thereon when it extends.

37. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to bend in a continuous curve when it extends.

38. A connector according to any of claims 2-4 or 14, wherein said spike is arranged to engages said tissue when it is axially retracted relative to the cylinder-like portion.

39. A connector according to claim 38, wherein said at least one spike comprises a plurality of spikes and wherein each of said spikes is independently retractable.

40. A connector according to any of claims 2-4 or 14, wherein said at least one spike comprises at least two spikes and wherein said connector comprises at least a second spike and wherein said second spike is arranged to bend towards said at least one spike and said at least one spike is arranged to bend towards at least a second spike.

41. A connector according to claim 40, wherein spikes of said at least a second spike are arranged in a radially staggered configuration relative to said at least two spikes.

42. A connector according to any of claims 2-4 or 14, wherein said at least one spike is associated with an individual flat coil spring.

43. A connector according to any of claims 2-4 or 14, wherein said at least one spike is associated with an axial cell element, which cell element selectively retracts or extends said spike.

44. A connector according to claim 40, wherein spikes of said at least a second spike are arranged to be in a same plane as spikes of said at least one spike, when the spikes are in a bent configuration.

45. A device according to any of claims 1-16, wherein said lumen has an elliptical cross-section.

46. A device according to any of claims 1-16, wherein said lumen has a circular cross-section.

47. A device according to any of claims 1-16, wherein said lumen has a polygonal cross-section.

48. A device according to any of claims 1-16, wherein said lumen has fixed inner diameter.

49. A device according to any of claims 1-16, wherein said lumen has a varying inner diameter.

50. A device according to claim 49, wherein said inner diameter has an hourglass profile, being flared at the ends of the lumen.

51. A device according to claim 49, wherein said lumen is flared at one end of the lumen.

52. A device according to any of claims 1-16, wherein a cross-section of said lumen varies along said lumen.

53. A device according to any of claims 1-16, wherein said lumen is matched to a coronary vessel.

54. A device according to claim 53, wherein said matching includes matching a degree of obliqueness of the lumen cross-section.

55. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements has parallelogram geometry.

56. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements has an elliptical geometry.

57. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements comprises a ratchet for maintaining said cell element in a distorted configuration, once such a configuration is achieved.

58. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements is arranged to distort out of a plane of said cell, when that cell is expanded along a certain axis thereof.

59. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements comprises an outline geometrical shape.

60. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements comprises a substantially full geometrical shape.

61. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements is planar.

62. A device according to any of claims 1, 2, 15 or 16, wherein at least one of said cell elements is not planar.

63. A device according to any of claims 1, 2, 15 or 16, wherein said cells are arranged as bands on at least a portion of said cylinder-like portion, each of said bands comprising substantially a single type of parallelogram.

64. A device according to claim 63, wherein said bands are axial bands.

65. A device according to claim 63, wherein said bands are circumferential bands.

66. A device according to any of claims 1, 2, 15 or 16, wherein substantially all of said cylinder-like portions is composed of cell-elements.

67. A device according to any of claims 1, 2, 15 or 16, wherein said cell elements meet at junctions and comprising at least one substantially rigid strut interconnecting at least two junctions.

68. A device according to any of claims 1, 2, 15 or 16, wherein said cell elements meet at junctions and comprising at least one substantially flexible wire interconnecting at least two junctions.

69. A device according to any of claims 1, 2, 15 or 16, wherein said cylinder-like portion comprises several cell types and wherein said cell types are uniformly distributed on said cylinder-like portion.

70. A device according to any of claims 1, 2, 15 or 16, wherein said cylinder-like portion comprises several cell types and wherein said cell types are non-uniformly distributed on said cylinder-like portion.

71. A device according to claim 70, wherein said distribution is symmetric.

72. A device according to claim 70, wherein said distribution is asymmetric.

73. A device according to any of claims 1-16, comprising one or more pressure protrusions on said cylinder-like portion, wherein said one or more pressure protrusions are arranged to increase a contact pressure between said two blood vessel when said device is deployed.

74. A device according to any of claims 1-16, wherein said cylinder-like portion comprises at least one part which is plastically deformable at a force which does not deform other parts of said portion.

75. A device according to claim 74, wherein at least one of said other parts reacts elastically at said force.

76. A device according to claim 74, wherein said part includes weakenings which guide the plastic distortion of said part.

77. A device according to any of claims 1-16, wherein said cylinder-like portion comprises at least one part which is super-elastic.

78. A device according to any of claims 1-16, wherein said cylinder-like portion comprises at least one part which comprises a temperature-triggered shape-memory material.

79. A device according to any of claims 1-16, wherein said cylinder-like portion comprises at least one part which comprises a temperature-responsive bi-material composite, which changes its geometry under the effect of small temperature changes.

80. A device according to any of claims 1-16, wherein at least one of tissue engagers comprises at least one part which is plastically deformable at a force which does not deform other parts of said tissue engagers.

81. A device according to claim 80, wherein at least one of said other parts reacts elastically at said force.

82. A device according to claim 80, wherein said part includes weakenings which guide the plastic distortion of said part.

83. A device according to any of claims 1-16, wherein said at least one of tissue engagers comprises at least one part which is super-elastic.

84. A device according to any of claims 1-16, wherein said at least one of tissue engagers comprises at least one part which comprises a temperature-triggered shape-memory material.

85. A device according to any of claims 1-16, wherein said anastomotic connector is adapted to engage a side of one of said vessels and an end of another of said vessels, to perform a side-to-end anastomosis.

86. A device according to claim 85, wherein said anastomosis is sealed by radial pressure exerted by said cylinder-like portion and wherein said tissue engagers maintain the cylinder-like portion in its position.

87. A device according to claim 85, wherein said tissue engagers maintain the relative positions of the two blood vessels.

88. A device according to claim 85, wherein said tissue-engaging portions are arranged on said cylinder-like portion such that when the anastomosis is complete, the cylinder like portion is at a certain angle perpendicular to the "side" vessel.

89. A device according to claim 85, wherein said certain angle is between about 70° and about 90°.

90. A device according to claim 85, wherein said certain angle is between about 50° and about 70°.

91. A device according to claim 85, wherein said certain angle is less than about 50°.

92. A device according to claim 85, wherein a cross-section of said lumen is matched to said certain angle.

93. A device according to any of claims 1-16, wherein said anastomotic connector is adapted to engage an end of one of said vessels and an end of another of said vessels, to perform an end-to-end anastomosis.

94. A device according to claim 93, wherein said connector is adapted to be implanted outside of a vascular system.

95. A device according to any of claims 1-16, wherein said anastomotic connector is adapted to engage a side of one of said vessels and a side of another of said vessels, to perform a side-to-side anastomosis.

96. A device according to claim 95, wherein said connector is adapted to be implanted outside of a vascular system.

97. A device according to any of claims 1-16, wherein said device is composed, at least in part, of a bio-absorbable material.

98. A device according to claim 97, wherein said cylinder-like portion is composed wholly of a bio-absorbable material.

99. A device according to claim 97, wherein at least one of said tissue engaging portions is composed wholly of a bio-absorbable material.

100. A device according to any of claims 1-16, wherein at least one of said tissue engagers is adapted to engage an everted graft.

101. A device according to any of claims 1-16, wherein at least one of said tissue engagers is adapted to engage a non-everted graft.

102. A device according to any of claims 1-16, wherein at least one of said tissue engagers is adapted to both an everted and a non-everted graft.

103. A device according to any of claims 1-16, wherein all of said tissue engagers are adapted to engage said blood vessels inside a body.

104. A device according to any of claims 1-16, wherein said cylinder-like portion has an axial dimension of about 0.5 millimeters.

105. A device according to any of claims 1-16, wherein said cylinder-like portion has an axial dimension of between about 0.5 millimeters and 2 millimeters.

106. A device according to any of claims 1-16, wherein said cylinder-like portion has an axial dimension of between about 2 millimeters and 5 millimeters.

107. A device according to any of claims 1-16, wherein said cylinder-like portion has an axial dimension of between about 5 millimeters and 8 millimeters.

108. A device according to any of claims 1-16, wherein said cylinder-like portion has a ratio of about 1:1 between its axial dimension and its diameter.

109. A device according to any of claims 1-16, wherein said cylinder-like portion has a ratio of between about 1:1 and about 1:2 between its axial dimension and its diameter.

110. A device according to any of claims 1-16, wherein said cylinder-like portion has a ratio of between about 1:2 about 1:4 between its axial dimension and its diameter.

111. A device according to any of claims 1-16, wherein said cylinder-like portion has a ratio of between about 1:4 about 1:8 between its axial dimension and its diameter.

112. A device according to any of claims 1-16, wherein said cylinder-like portion is arranged to expand radially by a factor of less than about 1.5.

113. A device according to any of claims 1-16, wherein said cylinder-like portion is arranged to expand radially by a factor of between 2 and 4.

114. A device according to any of claims 1-16, wherein said cylinder-like portion is arranged to expand radially by a factor of between 4 and 8.

115. An anastomotic connector for attaching two blood vessels, comprising:

a cylinder-like portion defining a lumen; and

a plurality of tissue engaging portions for engaging the blood vessels, said plurality comprising at least two spikes,

wherein said two spikes extend differently to engage said tissue.

116. A connector according to claim 115, wherein said spikes bend differently.

117. A connector according to claim 115, wherein said spikes engage the same blood vessel.

118. A connector according to claim 115, wherein said spikes engage different blood vessels.

119. A connector according to claim 115, wherein said two spikes are arranged to extend simultaneously.

120. A connector according to claim 115, wherein said two spikes are arranged to extend sequentially.

121. A connector according to claim 115, wherein said two spikes are arranged to extend semi-sequentially, such that there is an overlap between their motion.

122. A connector according to claim 115, wherein said two spikes are extended by a same distortion of said cylinder-like portion.

123. A connector according to claim 115, wherein the extension of at least one of said spikes is decoupled from distortion of said cylinder-like portion.

124. A connector according to claim 115, wherein said two spikes are extended by different degrees of radial expansion of said cylinder-like portion.

125. A connector according to claim 115, wherein said extension comprises impaling a portion of a blood vessel.

126. A connector according to claim 115, wherein said extension comprises transfixing a portion of a blood vessel.

127. A connector according to claim 115, wherein said extension comprises pinching a portion of a blood vessel.

128. An anastomotic connector for attaching two blood vessels, comprising:

a cylinder-like portion defining a lumen; and

a plurality of tissue engaging portions for engaging the two blood vessels,

wherein said connector has at least two configurations, a first configuration in which said tissue engaging portions are at a first extension state and a second configuration wherein said tissue engaging portions are at a second extension state, wherein said connector exhibits a bi-modal behavior in changing from said first configuration to said second configuration.

129. A connector according to claim 128, wherein said configuration change is effected by expanding said cylinder-like portion.

130. A connector according to claim 128, wherein said configuration change comprises the extension of a plurality spikes.

131. A connector according to claim 128, comprising at least one bi-stable element that controls said configuration change.

132. A connector according to claim 128, comprising at least one restraining element that controls said configuration change.

133. An anastomotic connector for attaching two blood vessel, comprising:
a cylinder-like portion defining a lumen; and
a plurality of tissue engaging portions for engaging the two blood vessels,
wherein said connector has at least two configurations, a first configuration in which said tissue engaging portions form a vessel piercing tip and a second configuration wherein said tissue engaging portions are operative to engage tissue.

134. A connector according to claim 133, wherein said plurality of tissue engaging portions comprise at least one spike.

135. A connector according to claim 133, wherein said plurality of tissue engaging portions are arranged at one end of said cylinder-like portions and comprising a second plurality of tissue engaging portions adjacent the other end of said cylinder-like portion.

136. An implantable device comprising:
a first portion designed to come in contact with blood; and
a second portion designed not to come in contact with blood,
wherein said second portion is coated with a coagulation-promoting material.

137. A device according to claim 136, wherein said device is an anastomosis connector.

138. A device according to claim 136, wherein said device is a vascular device for sealing a hole in a blood vessel.

139. A device according to any of claims 136-138, wherein said first portion is coated with a coagulation-retarding material.

140. A graft kit, comprising:

a sterility-maintaining packaging; and

a graft having at least two ends and having a side-to-end anastomotic connector attached to at least one of said two ends, wherein said anastomotic connector includes spikes for engaging a blood vessel.

141. A kit according to claim 140, comprising a restrainer for maintaining said spikes in an unengaged configuration.

142. A graft comprising:

a tubular body having at least one intersection, such that said body has at least three ends; and

at least two end-to-side anastomotic connectors attached to at least two of said three ends.

143. A hole puncher, adapted for punching a hole in a blood vessel, comprising:

an outer tube having distal portion, which distal portion has a lip;

a punch element having a sharp tip and defining a depression distal from the tip, wherein said depression is of a size adapted to receive a blood vessel,

wherein said distal portion of said outer tube has an outer diameter which is substantially the same as an outer diameter of said punch element and wherein said punch element fits snugly in said distal portion such that said lip can sever blood vessel tissue contained in said depression from tissue outside said depression.

144. A hole puncher according to claim 143, wherein said depression is distanced from said tip so that said distance is at least the thickness of the blood vessel.

145. A puncher according to claim 143, wherein said puncher is flexible enough to be provided through a blood vessel in which a hole is to be punched.

146. A puncher according to claim 143, comprising a handle.

147. A puncher according to claim 146, comprising means for advancing said outer tube relative to said handle and relative to said punch element.

148. A puncher according to claim 146, comprising means for retracting said punch element relative to said handle and relative to said outer tube.

149. A puncher according to any of claims 143-148, comprising means for advancing a graft into said hole formed by said punch.

150. A puncher according to any of claims 143-148, comprising a valve for preventing blood from leaking out of said outer tube once said punch element is removed.

151. A puncher according to any of claims 143-148, wherein said distal end comprises a stop for preventing entry of said distal end into said hole beyond said stop.

152. A puncher according to claim 151, wherein said stop is at an oblique angle relative to a main axis of said distal end, to guide said hole puncher to form an oblique punch.

153. A puncher according to any of claims 143-148, comprising a stop for prevention advance of said punch element relative to said distal end, beyond a pre-defined distance.

154. A puncher according to any of claims 143-148, wherein said punch element is radially expandable from a first, small diameter to a second, working diameter.

155. A puncher according to any of claims 143-148, wherein said distal end is radially expandable from a first, small diameter to a second, working diameter.

156. A puncher according to any of claims 143-148, wherein said depression in said punch element is at an oblique angle relative to a main axis of said punch element, whereby an oblique hole is punched thereby.

157. A puncher according to any of claims 143-148, wherein said lip of said outer tube is at an oblique angle relative to a main axis of said outer tube, whereby an oblique hole is punched thereby.

158. A puncher according to any of claims 143-148, wherein said hole puncher is arranged to punch an oblong hole.

159. Apparatus for everting a vessel over an anastomotic connector, comprising:

a vessel holder for holding said vessel; and

an expander, adapted to engage said vessel, at least at an end of said expander, which expander expands from a diameter of less than a diameter of said vessel to a diameter greater than that of said vessel and wherein in said expanded diameter, said at least said portion can enclose at least a portion of said vessel holder

160. Apparatus according to claim 159, comprising means for selectively moving said expander relative to said vessel, such that said engaged portion overlaps said vessel holder.

161. Apparatus according to claim 159, comprising a holder for an anastomotic connector.

162. Apparatus according to claim 161, comprising a retainer for maintaining said anastomotic connector in a desired configuration during at least a portion of said eversion.

163. Apparatus according to claim 159, wherein said apparatus is separable into two pieces.

164. Apparatus according to claim 159, comprising a guide for maintaining coaxiallity between said vessel holder and said expander.

165. Apparatus according to claim 164, wherein said guide comprises an intra-lumen vessel engager for engaging said vessel.

166. A tip mechanism for forming a hole in a blood vessel, from inside the blood vessel, comprising:

a wire portion;

a tip coupled to said wire portion; and

a motor coupled to said tip and adjacent to said tip.

167. A mechanism according to claim 166, wherein said wire is at least 10 cm long.

168. A mechanism according to claim 166, wherein said tip is a sharp tip.

169. A mechanism according to claim 166, wherein said motor is a piezoelectric motor.

170. A mechanism according to claim 166, wherein said motor is a magneto-strictive motor.

171. A mechanism according to claim 166, wherein said motor moves said tip in a rotational motion around a main axis of said wire.

172. A mechanism according to claim 166, wherein said motor moves said tip in an axial motion along a main axis of said wire.

173. A mechanism according to any of claims 166-172, wherein said tip is smooth.

174. A mechanism according to any of claims 166-172, wherein said tip includes protrusions for engaging soft tissue.

175. A mechanism according to any of claims 166-172, wherein said tip has a geometry matched to a geometry of said motor, such that an amplitude of motion of said tip is at least twice the amplitude of said motor.

176. A patch for sealing a hole in a blood vessel, comprising:

a body which can be selectively collapsed or expanded, such that the patch fits inside an catheter having a diameter suitable for travel in said blood vessel;

a plurality of tissue engaging elements on said patch; and

a seal,

wherein, when said device is expanded, placed over the hole and the tissue engaging elements engage said vessel, said seal seals said hole.

177. A framework for an endoscopic procedure, comprising:

a body which can be selectively collapsed or expanded, such that it fits through a tube used to access a surgical area;

fixation members for attaching said body to tissue at said surgical area; and

guidance members for guiding one or more tools at said area to perform said endoscopic procedure,

wherein said body is operative not to be rigidly coupled to said tube while in a surgical area.

178. A framework according to claim 177, wherein said framework has a plurality of stable configurations and wherein said stable configurations are matched to a particular endoscopic procedure.

179. A framework according to claim 178, wherein said configurations are achieved by selectively inflating at least one balloon coupled to said framework.

180. A framework according to claim 177, comprising a safety line for attaching said framework to a tool which exits said body.

181. A framework according to claim 177, wherein said body is unattached to said tube.

182. A method of performing a bypass, comprising:

transvascularly providing a graft at a first location in a vascular system;

forming a hole at said location;

expelling at least most of said graft out of said hole;

navigating said graft adjacent a second hole in said vascular system;

forming a hole at said second location;

percutaneously performing a first independently patent anastomosis at said first location, which anastomosis does not occlude said vascular system at said first location; and

percutaneously performing a second independently patent anastomosis at said second location, which anastomosis does not occlude said vascular system at said second location.

183. A method according to claim 182, wherein at least one of said first and said second anastomotic connections is performed such that no portion of an anastomotic connector remains in contact with blood in said vascular system.

184. A method according to claim 182, wherein at least one of said first and said second anastomotic connections is a side-to-side anastomosis.

185. A method according to claim 182, wherein at least one of said first and said second anastomotic connections is a side-to-end anastomosis.

186. A method according to claim 182, wherein at least one of said first and said second anastomotic connections is an intima-to-intima anastomosis.

187. A method according to claim 182, wherein at least one of said first and said second anastomotic connections is an anastomosis between an intima and a inside of a vessel wall.

188. A method according to claim 182, wherein at least most of a graft comprises all of the graft.

189. A method according to claim 182, wherein at least most of a graft comprises all of the graft except for a lip thereof.

190. A method according to claim 189, wherein only an intima of said lip is exposed to blood in said vascular system.

191. A method according to claim 182, wherein expelling at least most of a graft comprises expelling all of the graft out of the lumen of said vessel while maintaining a portion of said graft in a cross-section of sad vessel wall.

192. A method of performing an anastomosis, comprising:
transvascularly providing a graft at a location in a vascular system;
forming a hole at said location;
expelling said graft completely out of said hole; and

transvascularly performing an independently patent anastomosis at said location, which anastomosis does not occlude said vascular system at said location.

193. A method according to claim 192, wherein said anastomosis is a side-to-end anastomosis.

194. A method according to claim 192, wherein said anastomosis is an end-to-end anastomosis.

195. A method according to claim 192, wherein said anastomosis is performed using an anastomotic connector and wherein said connector is completely outside a blood flow of said vascular system after said anastomosis.

196. A method according to claim 192, wherein said anastomosis is performed using an anastomotic connector and wherein said only spike portions of said connector are in contact with a blood flow of said vascular system after said anastomosis.

197. A method according to claim 192, wherein said anastomosis is performed using an anastomotic connector and wherein said connector forms said hole.

198. A method of anastomosis comprising:

providing an expandable anastomotic device; and

inflating said device to simultaneously open an anastomotic passage and perform an anastomotic connection.

199. A method of anastomosis attachment comprising:

inserting an anastomotic device to attach two blood vessels; and

inflating a balloon in said device if said attachment leaks.

200. A method of punching a hole in a blood vessel, comprising:

providing a hole puncher to a location in a vascular system, which location has blood flowing therethrough;

transfixing a wall of said vascular system at said location;

removing a portion of said wall using said hole puncher, while said hole-puncher remains transfixing said wall; and

transporting a tool across said wall through a lumen of said hole puncher.

201. A method according to claim 200, wherein said removing comprises partially retracting a portion of said hole puncher.

202. A method according to claim 200, wherein said removing comprises partially advancing a portion of said hole puncher.

203. A method according to claim 200, comprising using said tool to perform an anastomosis connection.

204. A method according to any of claims 200-203, wherein said providing is from inside of said vascular system.

205. A method according to any of claims 200-203, wherein said providing is from outside of said vascular system.

206. A method of everting a graft over an anastomotic connector, comprising:

sliding said anastomotic connector over said vessel, to a point adjacent an end of the vessel;

expanding a portion of said vessel between said point and said end; and

everting said expanded portion over of said connector.

207. A method according to claim 206, wherein said everting and said expanding use a same tool.

208. A method according to claim 206, comprising transfixing said vessel at or about said portion with an anastomotic connector.

209. A method of performing a side to end anastomosis, comprising:

providing a graft to a location on a side of a blood vessel;

forming a hole in said side blood vessel;

engaging one face of said side of the blood vessel, using an anastomosis connector to perform a first portion of the anastomosis; and

completing the anastomosis by engaging the second face of said side using the anastomosis connector.

210. A method according to claim 209, wherein said providing is from inside of said blood vessel.

211. A method according to claim 209, wherein said providing is from outside of said blood vessel.

212. A method of performing a bypass procedure, comprising:

transvascularly providing a graft at a first location in a vascular system;

expelling at least most of said graft out of a hole at said first location;

navigating an end of said graft to a second location in said vascular system;

performing an anastomosis at said second location; and

thereafter transfixing said graft to said vascular system at said first location, using an anastomotic connector.

213. A method of performing an anastomosis, comprising:

providing a graft at a location in a vascular system;

forming a hole at said location; and

simultaneously expanding said hole and completing an anastomotic connection between said graft and said vascular system at said location.

214. A method according to claim 213, wherein said forming and said expanding comprises a continuous process.

215. A method according to claim 213, wherein said forming and said expanding comprises a discrete-step process.